

NewsRelease



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New Chamber Will Help Engineers Design Futuristic Aircraft

Airliners may some day be wired for direct, live satellite broadcasts and military aircraft may be better able to evade enemy threats because of a new microwave test chamber at the NASA Langley Research Center in Hampton, Va.

The \$5 million facility, called the Experimental Test Range (ETR), opens officially Tuesday, Nov. 16, at 3:30 p.m.

The Experimental Test Range is a sort of "electromagnetic wind tunnel" that will help engineers design and test advanced microwave systems, such as timely weather information for pilots, navigational aids, satellite television reception, wireless internet connections, and other modern technologies for future aircraft.

The ETR will be used to examine how advanced aircraft models react to a broad spectrum of microwave frequencies. Some of the results may translate into improved survivability, including better speed, maneuverability and stealth technology, for military jets. The chamber will also test new antenna systems that would allow better communications in airliners and satellites.

The Experimental Test Range is a 40 foot by 80 foot chamber with 40 foot ceilings. Its walls, floors and ceiling are padded with hundreds of gray, energy absorbing polyurethane foam pyramids and wedges that are about three feet tall. At one end of the room is a 28' square reflector. Near the other end is where the aircraft model will be suspended for testing.

What makes the laboratory unique is its capability to take low frequency measurements. NASA Langley has been a leader in testing high frequency systems, such as those used in police radar, since the 1980s. But testing systems that operate at low frequencies has presented a greater challenge because the lower the frequency the longer the wavelength and the bigger the test chamber has to be.

Langley engineers developed advanced microwave energy absorbing materials, a new reflector system to beam energy towards a test object and a low cost model support system and incorporated all those technologies into the Experimental Test Range. The results of these technology advancements are already being commercialized to United States industries.

Among the first projects to use the new Experimental Test Range will be the Blended Wing Body (BWB) flight test program. NASA is looking at the BWB flying wing as a possible next generation jumbo jet. The first military customer to use the ETR will be the National Ground Intelligence Center based in Charlottesville, Va.

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